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# Manual of the Loneliness Scale

1999

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# Manual of the Loneliness Scale

## 1999

### §1 *Preliminary remarks*

The Loneliness Scale was developed by De Jong Gierveld and colleagues. See for a program overview De Jong Gierveld (1989). The scale is available for scientific research programs, under the following conditions:

- a The source of the scale should be mentioned, i.e. De Jong Gierveld & Kamphuis (1985). When references are made to specific topics, e.g., the norm scores, the original source of information should be cited.
- b A copy of the manuscripts describing results of the scale should be sent to the authors of this manual.
- c Part of the research data should be made available to the authors of this manual, for the purpose of validating studies. These data should include the answers to the items of the loneliness scale, as well as age, sex, marital status, household arrangements, living arrangements, employment status, education, race, and health (see Appendix 1 for usual operationalizations). Data should be the original ones (not recoded) and should include data definitions (e.g. SPSS set-up), description of the purposes of the study and a description of the sample (selection, stratification, non-response, etcetera). The data should be made available on disk or by electronic mail.

### §2 *The scale items*

The scale may be used in face-to-face interviews, telephone interviews, self-administered (mail) questionnaires, as well as in electronic data collection. We recommend that the scale be presented somewhere in the middle of the interview or questionnaire; that is, at a moment when a considerable degree of self-disclosure from the respondents may be expected. Ideally, questions about characteristics of the respondents' networks of social relationships should precede the scale items.

The scale consists of 11 items; six are formulated negatively and five are formulated positively. The items are preceded by an introduction.

We shall continue with a set of statements. These statements were made by individuals who had previously shared their experiences with us. Please indicate for each of the 11 statements, the extent to which they apply to your situation, the way you feel now. Please, circle the appropriate answer.

- 1 There is always someone I can talk to about my day-to-day problems
- 2 I miss having a really close friend
- 3 I experience a general sense of emptiness
- 4 There are plenty of people I can lean on when I have problems
- 5 I miss the pleasure of the company of others
- 6 I find my circle of friends and acquaintances too limited
- 7 There are many people I can trust completely
- 8 There are enough people I feel close to
- 9 I miss having people around
- 10 I often feel rejected
- 11 I can call on my friends whenever I need them

Er volgen nu enkele uitspraken. Deze uitspraken zijn opgetekend uit de mond van een groot aantal mensen met wie eerder uitgebreid over hun situatie is gesproken. Wilt u van elk van de volgende uitspraken aangeven in hoeverre die op u, zoals u de laatste tijd bent, van toepassing is? Omcirkel het antwoord dat op u van toepassing is.

Er is altijd wel iemand in mijn omgeving bij wie ik met mijn dagelijkse probleempjes terecht kan

Ik mis een echt goede vriend of vriendin

Ik ervaar een leegte om me heen

Er zijn genoeg mensen op wie ik in geval van narigheid kan terugvallen

Ik mis gezelligheid om me heen

Ik vind mijn kring van kennissen te beperkt

Ik heb veel mensen op wie ik volledig kan vertrouwen

Er zijn voldoende mensen met wie ik me nauw verbonden voel

Ik mis mensen om me heen

Vaak voel ik me in de steek gelaten

Wanneer ik daar behoefte aan heb kan ik altijd bij mijn vrienden terecht

Possible answers are yes! , yes , more or less , no , no! ( ja! , ja , min-of-meer , nee , nee! ). When face-to-face interviews or telephone interviews

are conducted, it may be sufficient to offer the respondents only the answers yes , more or less and no .

In self-administered questionnaires an example may be added between the introduction and the items:

The following statement serves as an example: There is actually no one with whom I would want to share my joy or sorrow . If you experience these feelings in exactly the same way, please circle the answer yes! as shown below

Een voorbeeld bij de uitspraak:  
Ik voel dat ik met nogal veel mensen goed kan opschieten .  
Stel, u herkent deze gevoelens ook precies zo bij uzelf, dan omcirkelt u het antwoord Ja! op de volgende manier:

(Add the example item, add the possible answers and circle yes!)

### *§3 Loneliness model*

The development and testing of an explanatory loneliness model were described in De Jong Gierveld (1987); see also De Jong Gierveld (1998). The model is based on the so-called cognitive theoretical approach to loneliness. Characteristic of this approach to loneliness is the emphasis on the discrepancy between what one wants in terms of interpersonal affection and intimacy, and what one has; the greater the discrepancy, the greater the loneliness. Background characteristics (such as marital status, sex and living arrangements), descriptive characteristics of the social network, number and frequency of contacts with network members, and personality and health were identified as important loneliness-provoking factors. Other factors were found to be of crucial importance as well, such as social norms and values, expectations of support associated with certain relationships, and the positive or negative evaluation of the network of relationships-as-realized.

### *§4 Development of the scale*

The conceptualization of loneliness drew upon the cognitive approach to loneliness. In this approach, loneliness is seen as a subjective experience and is, as such, not directly related to situational factors. Loneliness, or subjective social isolation, is defined as a situation experienced by the participant as one where there is an unpleasant or inadmissible lack of (quality of) certain relationships. The importance of social perceptions and evaluations of one's personal relationships is emphasized. Loneliness includes situations where the number of existing relationships is smaller than desirable or acceptable, as well as situations where the intimacy wished for has not been realized (De Jong Gierveld, 1989).

Originally, a 34-item multidimensional scale of loneliness (De Jong Gierveld, 1984, 1985; De Jong Gierveld & Raadschelders, 1982) was developed. In developing the scale, the researchers started with a content analysis of accounts written by 114 lonely people about their experiences. Next, items derived from the accounts were tested in a pilot investigation under 59 women and men. A revised set of items was included in a questionnaire which was administered by means of semi-structured face-to-face interviews with 556 women and men. Because this 34-item scale was found to primarily measure severe feelings of loneliness, changes were made. An 11-item unidimensional scale was developed on the basis of 30 items, using data of unemployed, disabled, and employed men and women. The data were gathered by a self-administered questionnaire given to the respondents at the end of a face-to-face interview. The scale: (1) assessed severe feelings of loneliness as well as less intense loneliness feelings; (2) consisted of negative as well as positive items; and (3) represented a latent continuum of deprivation. In addition, the scale met the criteria of the dichotomous logistic Rasch model (De Jong Gierveld & Kamphuis, 1985).

### §5 *Psychometric properties*

Typically, a scale reliability in the .80 - .90 range is observed (Cronbach's  $\alpha$  or  $\rho$ ). The homogeneity of the scale varies across studies, with Loevingers'  $H$  typically in the .30 - .50 range (higher when mail questionnaires were applied than in face-to-face interviewing), which is sufficient, but not very strong. Details of psychometric properties of the scale were reported in a number of studies (see appendix 4; see for an overview until 1991, König-Zahn, Furer & Tax, 1994).

### §6 *Methodological and substantial concerns*

**Robustness.** The results of a study by De Jong Gierveld & Van Tilburg (1987) showed that the reliability and construct validity of the scale were sufficient in five research projects (using self-administered paper questionnaires as well as face-to-face interviews). Though not analyzed systematically, the different modes of data collection did not seem to influence the mean score of the scale. Striking similarities in mean scale scores (theoretical range 0-11) were found among people in comparable population categories (also see De Jong Gierveld & Van Tilburg, 1989). For example, among those who nominated their partners as their primary confidant and rated the relationship with that person as very intimate, the mean scale scores ranged from 1.9 to 2.1. The differences across the studies were not significant. Among those whose partner relationship did not meet

the intimacy criteria, the mean scale scores ranged from 2.8 to 3.4. Again, the differences across the studies were not significant. Comparisons within each of the studies showed significant differences based on the intimacy of the partner relationship. Among those without a partner (who were either living on their own or were heads of single-parent households) the mean scale scores ranged from 3.2 to 4.1. For these respondents a number of significant differences were found across the various studies. The observed differences are probably attributable to the large degree of heterogeneity within that population category. Within each of the studies, the mean scale score of the respondents without a partner was significantly higher than that of the respondents with a partner, regardless of the reported intimacy of the relationship.

Data on the scale were re-analyzed to investigate the robustness of the scale (defined as invariance of item non-response, inter-item (scale) homogeneity, person scalability, item  $p$ -values and scale means) (Van Tilburg & De Leeuw, 1991). The data were taken from six surveys. Variegated data collection procedures were used: three surveys with self-administered paper questionnaires, two surveys with face-to-face interviews, and one survey with so-called teleinterviews. In order to compare the properties of the loneliness scale, a relatively homogeneous category of respondents was selected: women between the ages of 25 and 65, who were living without a partner. An examination of the scale with regard to robustness showed that it was not robust for all five aspects. No evidence was found for the assumption that the use of a self-administered questionnaire would lead to high item non-response, higher than when using other data collection procedures. It was also assumed that in self-administered questionnaires or teleinterviews a better inter-item homogeneity and a better person scalability would be found than in studies with face-to-face interviews. The results were in line with this assumption. Further, it was believed that the absence of an interviewer would result in greater self-disclosure by the respondents and therefore in higher scale means. No supporting evidence was found for this assumption. In general, the results showed that the loneliness scale met the psychometric requirements of item non-response, scale homogeneity and person scalability.

In a study by De Leeuw (1992), three methods of survey research face-to-face interviews, telephone interviews and mail questionnaires were compared. Adjusted for a number of factors, the highest mean score was observed for the mail questionnaires (3.4), which differed from the mean scores for the face-to-face and telephone interviews (2.6 and 2.7, respectively). The explained variance was only .014.



In the previous studies, data collected with self-administered questionnaires and with face-to-face interviews were compared among different respondents. In the research programs Living arrangements and social networks of older adults (Knipscheer et al., 1995) and Longitudinal Aging Study Amsterdam (Deeg, Knipscheer & Van Tilburg, 1993) different types of data collection were conducted among a subsample of 333 respondents. Three answering categories were applied in the face-to-face interviews. In the self-administered questionnaires, five answering categories were applied. For most of the respondents ( $n = 281$ ), the sequence of the types of data collection was face-to-face, self-administered, face-to-face, self-administered, face-to-face, which seems to be an ideal design for comparing the two modes. In a multilevel regression analysis, controlling for the effect of time, the unstandardized regression coefficient ( $B$ ) for the mode was .77 with a standard error of .08, indicating that there was a significantly higher loneliness score when self-administered questionnaires were used. In another study (Van Tilburg & De Jong Gierveld, submitted), data from two research projects, one using self-administered questionnaires and one using face-to-face interviews, were compared. Again, a significant mode effect in the same direction was observed ( $B = .5$ ).

We may conclude that different modes of data collection, including a different number of answering categories, influence the mean score of the scale. This is in line with the observation by Sudman & Bradburn (1974) that, compared with interviews, the more anonymous and private setting in which mail surveys are completed, reduces the tendency of respondents to present themselves in a favorable light.

*Unidimensionality.* As reported above, the homogeneity of the scale is not very strong. When searching for more homogeneous subscales, two factors emerge (De Jong Gierveld & Van Tilburg, 1991, 1992). The first, most homogeneous factor is the subscale of the negative items, the second is the subscale of the positive items. A subscale consisting of only negatively, or only positively formulated items may elicit response bias via either nay saying or yeah saying of the respondents. However, it may also be argued that these two factors reflect the dimensions of emotional and social loneliness, respectively, as suggested by Weiss (1973). In a study conducted by De Jong Gierveld & Van Tilburg (in press), the subscales were used. They conclude that the 11-item scale, a combination of the positive and negative subscales, has been frequently used in survey research and has been tested for response bias and controlled for unidimensionality and homogeneity of the total set of items. Depending on the research question of the study under

consideration, we recommend the selection of either the positive and negative subscales separately, or the use of the 11-item loneliness scale.

*Dichotomizing the item scores.* In developing the scale, item response models like Rasch and Mokken (MSP) were applied to evaluate the homogeneity of the scale. In view of the available computer programs we had to dichotomize the item scores. New releases of the computer programs allow multi-categorical item scores. However, the results of an analysis based on the data of 4,045 older adults, collected within the LSN research program using face-to-face interviews, showed that the scale scores (range 0-11) based on dichotomized item scores and the scale scores (range 11-33) computed as the sum of the three-category item scores correlated very strongly ( $r = .97$ ). Furthermore, the results of an analysis based on the data of 2,976 adults aged 18 and older, also collected within the LSN research program but using self-administered questionnaires, showed that the scale scores (range 0-11) based on dichotomized item scores and the scale scores (range 11-55) computed as the sum of the five-category item scores correlated strongly ( $r = .87$ ). A research project on the homogeneity of the scale based on the multi-category item scores is in progress. For the time being, we prefer the scale score based on dichotomous item scores, which facilitates comparison of the results with those of earlier studies.

*Norm scores and cutting scores.* In a study by Van Tilburg & De Jong Gierveld (submitted), norm scores were developed for an older Dutch population. These scores were derived from the scale scores for several sub-populations (the averages are presented in Appendix 2) and were based on three-category dichotomized item scores. The data were collected in face-to-face interviews. The lowest average loneliness scores (1.0) were observed among older adults living with a partner and having a large personal network, and the highest average loneliness scores (4.9) were observed among single divorced older adults with a small network. The norm scores are given as percentile scores for various subcategories of elderly people (Appendix 3) and are computed as  $(\text{cumulative frequency} - \frac{1}{2} \text{ frequency}) \times 100 / N$ . The cutting scores for the oral data on the loneliness scale were based on the individuals' self-assessed levels of loneliness. More than would be the case with arbitrary cutting scores, this is in keeping with the individuals' own perceptions. Based on cutting scores of 3 (to distinguish between lonely people and not lonely people), 9 (between severely or quite lonely people and others) and 11 (between severely lonely people and others), the figures showed that 68% of the elderly in the Netherlands are not lonely, 28% are moderately lonely, 3% are quite lonely and 1% are extremely lonely. The proposed cutting scores are tentative ones. This classification has yet to

prove its worth in actual practice. In addition, a cutting score is related to the specific culture and point in time.

*Comparison with the UCLA-loneliness scale.* De Jong Gierveld & Van Tilburg (1991, 1992) have conducted a study among Dutch older adults in which the scores on the Loneliness Scale were compared with the well-known UCLA-loneliness scale (Russell, 1996; Russell, Peplau & Cutrona, 1980). The results showed that the Loneliness Scale was sufficiently reliable, but insufficiently homogeneous (see above), while the UCLA-loneliness scale did not prove to be a scale. The positive subscale of the Loneliness Scale correlated strongly with a 7-item subscale of the UCLA-loneliness scale. The negative subscale of the Loneliness Scale correlated relatively strongly with direct measures of loneliness, while the positive subscale of the Loneliness Scale and a 7-item subscale of the UCLA-loneliness scale correlated moderately with the direct measures. In a study by Gerritsen (1997) among Dutch young adults, a strong correlation was observed between the Loneliness Scale and the UCLA-loneliness scale. Both correlated more or less equally with two single, direct questions on loneliness.

### §7 Processing the scale data

The following SPSS syntax commands serve as an illustration (comments are added in *italics*):

#### *Reading the raw data:*

```
data list file = 'lonely.dat' free / lone1 lone2 lone3 lone4 lone5 lone6
lone7 lone8 lone9 lone10 lone11.
```

```
variable labels
```

```
lone1 'can talk about daily problems'
lone2 'miss really close friend'
lone3 'experience emptiness'
lone4 'people to lean on when I have problems'
lone5 'miss the pleasure of company'
lone6 'circle of friends too limited'
lone7 'many people I can trust'
lone8 'enough people I feel close to'
lone9 'miss having people around'
lone10 'often, I feel rejected'
lone11 'can rely on friends whenever necessary'.
```

```
format lone1 to lone11 (f2).
```

*If a respondent has scored two or more missing values, the particular case has to be deleted from the analysis:*

count nmissing=lone1 to lone11 (-1).

select if (nmissing ge 2).

*For five-category responses and scale scores based on dichotomized item scores:*

value labels lone1 to lone11

5'yes! 4'yes 3'more or less 2'no 1'no! - 1'no answer'.

*The five-category responses must be transformed into dichotomous responses. Responses indicating a (certain) feeling of loneliness are assigned a score of one loneliness point. That is, if the response more or less, yes, or yes! is given to a negatively formulated item (item numbers 2, 3, 5, 6, 9, 10) or if the response no!, no, or more or less is given to a positively formulated item (item numbers 1, 4, 7, 8, 11), a scale point is assigned. Under this procedure, the more or less answers are not considered to be neutral answers, but indicators of loneliness. The other answers are assigned a zero score. Thus, in the case of extreme loneliness, a respondent can score a total of 11 loneliness points. The minimum score is 0. If a respondent has scored one and only one missing value, the response is not considered to be a loneliness indicator; thus no scale point is given for the item.*

count lone=lone1 lone4 lone7 lone8 lone11 (1,2,3)

lone2 lone3 lone5 lone6 lone9 lone10 (3,4,5).

variable label lone 'loneliness < Scale de Jong Gierveld >'.

value labels lone 0'no loneliness' 11'severe loneliness'.

format lone (f2).

*For three-category responses and scale scores based on dichotomized item scores:*

value labels lone1 to lone11

3'yes 2'more or less 1'no - 1'no answer'.

count lone=lone1 lone4 lone7 lone8 lone11 (1,2)

lone2 lone3 lone5 lone6 lone9 lone10 (2,3).

variable label lone 'loneliness < Scale de Jong Gierveld >'.

value labels lone 0'no loneliness' 11'severe loneliness'.

format lone (f2).

*For five-category responses and scale scores based on multi-category item scores:*

value labels lone1 to lone11

5'yes! 4'yes 3'more or less 2'no 1'no! - 1'no answer'.

missing values lone1 to lone11 (-1).

*The remaining missing values are replaced by the sample mean:*

```
rmv /lone1 = smean(lone1) /lone2 = smean(lone2)
    /lone3 = smean(lone3) /lone4 = smean(lone4)
    /lone5 = smean(lone5) /lone6 = smean(lone6)
    /lone7 = smean(lone7) /lone8 = smean(lone8)
    /lone9 = smean(lone9) /lone10 = smean(lone10)
    /lone11 = smean(lone11).
```

*By subtracting the scores on positive items from 6, the scores are reversed:*

```
compute lone = 6-lone1 + lone2 + lone3 + 6-lone4 + lone5 + lone6
    + 6-lone7 + 6-lone8 + lone9 + lone10 + 6-lone11.
variable label lone 'loneliness < Scale de Jong Gierveld >'.
value labels lone 11 'no loneliness' 55 'severe loneliness'.
format lone (f4.1).
```

*For three-category responses and scale scores based on multi-category item scores:*

```
value labels lone1 to lone11
    3 'yes' 2 'more or less' 1 'no' -1 'no answer'.
missing values lone1 to lone11 (-1).
rmv /lone1 = smean(lone1) /lone2 = smean(lone2)
    /lone3 = smean(lone3) /lone4 = smean(lone4)
    /lone5 = smean(lone5) /lone6 = smean(lone6)
    /lone7 = smean(lone7) /lone8 = smean(lone8)
    /lone9 = smean(lone9) /lone10 = smean(lone10)
    /lone11 = smean(lone11).
compute lone = 4-lone1 + lone2 + lone3 + 4-lone4 + lone5
    + lone6 + 4-lone7 + 4-lone8 + lone9 + lone10 + 4-lone11.
variable label lone 'loneliness < Scale de Jong Gierveld >'.
value labels lone 11 'no loneliness' 33 'severe loneliness'.
format lone (f4.1).
```

*For scale scores based on three-category dichotomized item scores, one might use a further categorization of the scale scores, based on cutting scores proposed by Van Tilburg & De Jong Gierveld (submitted):*

```
compute lonecat = lone.
variable label lonecat '4 categories of loneliness'.
recode lonecat (0 thr 2 = 0) (3 thr 8 = 1) (9, 10 = 2) (11 = 3).
value labels lonecat 0 'not (0-2)' 1 'moderate (3-8)' 2 'severe (9-10)'
    3 'very severe (11)'.
format lonecat (f1).
```

## § 8 References other than in Appendix 4

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## Appendix 1

Requested background data for the purpose of validation studies<sup>(1)</sup>

<i>Identification subsamples</i>	<i>Identificatie deelsteekproeven</i>
<i>Year and months of data collection</i>	<i>Jaar/maanden dataverzameling</i>
<i>Sex</i>	<i>Sekse</i>
<i>Age (or year and month of birth)</i>	<i>Leeftijd (of geboortjaar of -datum)</i>
<i>Official marital status</i>	<i>Burgerlijke staat</i> (N.B. zoals in bevolkingsregister opgenomen)
- unmarried and never married	- ongehuwd en nooit gehuwd
- married	- gehuwd
- divorced (separated)	- gescheiden (evt. van tafel en bed)
- widowed	- weduwstaat
<i>Household composition</i>	<i>Samenstelling huishouden</i>
- unmarried, living with parent(s)	- woont ongehuwd bij ouder(s)
- living with partner, no children	- woont met partner, zonder kinderen
- living with partner and children	- woont met partner en kinderen
- living with partner in household of different composition	- woont met partner in anders samengesteld huishouden
- one-parent family	- woont zonder partner, met kinderen (éénoudergezin)
- living without partner in household of different composition	- woont zonder partner in anders samengesteld huishouden
- living alone	- woont alleen

<sup>(1)</sup> Appropriate questions, if not given, may be found in: De Bie, S.E. (1987). *Standaardvragen 1987: Voorstellen voor uniformering van vraagstellingen naar achtergrondkenmerken in interviews* [Standard questions 1987: Proposals for uniformity in inquiries into background characteristics]. Leiden: Vereniging van Onderzoek Instituten.

*Residential situation*

- living independently
- living in with private person
- home for the elderly, personal care home
- student residence
- independent planned housing, congregate housing (only for elderly persons)
- other

*Employment status (paid employment)*

- no employment history
- employed,  $\geq 20$  hours a week
- employed,  $\leq 19$  hours a week
- disabled
- retired
- other non-employed

*Education (highest level, whether or not completed)*

- primary education (6 years)
- lower vocational training (6 + 3 years)
- intermediate vocational training (6 + 4 years)
- lower secondary education (6 + 4 years)
- intermediate secondary education (6 + 5 years)
- higher secondary education (6 + 6 years)
- higher vocational training (6 + 5 + 4 years)
- university (6 + 6 + 4 years)

*Self-rated health*

What is your general state of health?  
1 poor, 2 not so good, 3 fair, 4 good,  
5 very good

*Woonsituatie*

- zelfstandig wonend
- inwonend bij particulier
- bejaarden-, verzorgingstehuis
- studentenflat
- aanleunwoning, serviceflat
- overig

*Werksituatie (N.B. betreft betaald werk)*

- nooit gewerkt
- werkend,  $\geq 20$  uur per week
- werkend,  $\leq 19$  uur per week
- arbeidsongeschikt
- gepensioneerd
- overig niet meer werkend

*Opleiding (N.B. betreft hoogst genoten opleiding, evt. niet voltooid)*

- lager algemeen onderwijs
- lager beroepsonderwijs
- middelbaar algemeen onderwijs
- middelbaar beroepsonderwijs
- hoger algemeen onderwijs
- voorbereidend wetenschappelijk onderwijs
- hoger beroepsonderwijs
- universitair

*Zelfbepaling van gezondheid*

Hoe is over het algemeen uw gezondheid?  
1 slecht, 2 niet zo best, 3 gaat wel, 4 goed, 5 zeer goed



*ADL capacity*

- Can you walk up and down stairs?
- Can you get up from and sit down in a chair?
- Can you dress and undress yourself?

1 not at all, 2 only with assistance, 3 with much difficulty, 4 with some difficulty, 5 without difficulty

---

*ADL capaciteit*

- Kunt U de trap op- en aflopen?
- Kunt U gaan zitten en opstaan uit een stoel?
- Kunt U zich aan- en uitkleden?

1 helemaal niet, 2 alleen met hulp, 3 met veel moeite, 4 met enige moeite, 5 zonder moeite

---

## Appendix 2

Averages (M) for the Loneliness Scale, controlled for sex and age, for face-to-face interviewing of an older Dutch population, based on three-category dichotomized item scores. Deviations ( $\Delta$ ) for mailed questionnaires, based on five-category dichotomized item scores.

	Living with partner		Single, unmarried	Single, divorced	Single, widowed		Multiperson household, without partner
	M	$\Delta$	M	M	M	$\Delta$	M
All	1.7	+.3	3.2	3.5	3.2	+.9	2.6
Sex							
- male		+.4	4.3	3.7	3.8	+1.3	3.4
- female		+.1	2.5	3.2	3.2	+.9	2.3
Age							
- 54-59	1.3						
- 60-69	1.5	+.3				(+.3)	
- 70-79	2.0	+.3				+1.3	
- 80-89	2.2	+.3				+.8	
Size personal network							
- 0-6	2.8		3.8	4.9	4.4		3.5
- 7-12	1.8		3.2	3.2	3.5		2.8
- 13-18	1.6		2.9	2.7	2.5		1.9
- $\geq 19$	1.0		1.7	(1.1)	2.2		1.8
Number of children							
- none	2.3	+1.6			4.4	(-2.2)	
- 1-3	1.7				3.4		
- $\geq 4$	1.5	+.2			2.9	+1.2	
Health							
- poor	2.2	+.6	4.0	4.8	4.1	+1.8	3.1
- good	1.5	+.1	2.7	2.6	2.8	+.2	2.2

Note: Averages in parentheses are based on about 15 observations

Source: Van Tilburg & De Jong Gierveld (submitted)

## Appendix 3

Percentiles for the Loneliness Scale scores for various subsamples; face-to-face interviewing with three answering possibilities among older adults (aged 54-89) living independently.

	Scale score											
	0	1	2	3	4	5	6	7	8	9	10	11
All (weighted data)	19	48	62	73	81	86	91	94	96	97	98	99
All (unweighted data)	18	44	59	69	78	84	89	93	95	97	98	99
Living with partner	22	53	68	78	85	90	94	96	97	98	99	100
- Health: poor	17	44	59	70	78	84	90	93	95	97	98	99
- Health: (very) good	24	58	73	82	89	93	96	97	98	99	99	100
Living alone, unmarried	11	31	43	53	65	73	80	87	94	96	97	99
Living alone, divorced	14	34	46	54	62	72	78	84	86	90	95	98
Living alone, widowed	10	26	40	52	64	73	81	87	92	95	97	99
- Males	6	17	31	43	54	68	78	86	92	96	99	100
- Females	11	29	43	56	67	75	82	88	91	94	97	99
- No children	7	19	29	39	51	59	68	75	81	88	95	99
- 1-3 Children	10	26	40	51	62	72	81	88	92	94	97	99
- ≥ 4 Children	11	29	44	59	71	81	87	91	95	97	98	99
- Health: poor	7	21	32	42	53	63	73	81	87	92	96	99
- Health: (very) good	12	30	45	59	71	81	87	92	95	97	98	99
Multiperson household without partner	13	36	53	65	74	81	87	91	94	96	98	99

Source: Van Tilburg & De Jong Gierveld (submitted)

## Appendix 4

Reports of research projects in which  
the Loneliness Scale has been applied

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